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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,868

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Jin-Tae Kim

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EXAMINER

SANDERS, KRIELLION ANTONETTE

ART UNIT

PAPER NUMBER

1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,868	Applicant(s) KIM ET AL.	
	Examiner Kriellion A. Sanders	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14, 15 and 18-29 is/are rejected.
- 7) ☒ Claim(s) 12, 13, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/07</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11, 14, 15 and 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al, US Patent No. 6,773,803 in view of Tanaka et al, US PG Publication No.20040249012 A1., and further in view of Kim et al, Japanese Patent No.1020030052373, JP 11335596 A (Derwent abstract No. 2000-092747 is used for translation).

3. Lee et al discloses far-infrared emission powders and resin-coated steel plates having antibacterial activity and far-infrared emission properties. Patentee states that in addition to being 0.9 or higher in emissivity, the far-infrared emission powders are inhibitory against the growth of bacteria, with a pH value of 7.5-10.5 in its saturate aqueous solution. Patentee discloses a coating material comprising 5-100 parts by weight of the powder per 100 parts by weight of the resin wherein said coating is coated to a dry thickness of 5-60 mum on an electromagnetic shield, steel plate, without interruption of the intrinsic electromagnetic shield properties of the steel plate. In accordance with an embodiment of the invention, ceramics such as MgO, Mg(OH)₂, ZnO, Zn(OH)₂, CaCO₃ or mixtures thereof indicating antibacterial and far-infrared emissive are preferably contained in an amount of 17% by weight or more in an emission powder. Patentee states that if the oxides or hydroxides are used in an amount less than 17% by weight, they (the powders) do not show excellent far-infrared emissivity.

Patentee explains that in addition to being superior in terms of far-infrared emissivity and antibacterial activity, powders containing MgO, Mg(OH₂, ZnO, Zn(OH)₂, CaCO₃ or mixtures thereof are harmless to the body. Therefore, the emission powder of the invention, in combination with a paint or resin, can be applied to any place where antibacterial activity and healthful far-infrared emission are required. Illustrative, but not limitative examples of the applications that the emission powders of the invention have, include resin-coated steel plates, wallpaper, furniture, and plastic cases.

For application to steel plates, as mentioned above, the emission powder is combined with a resin. Any resin, applied to steel plates can be used to combine with the emission powder of the invention. Illustrative, non-limiting examples of the resin useful in the invention include polyester resins and acryl resins.

As occasions demand, the resin composition for coating steel plates may comprise a curing agent, a dulling agent, a dispersing agent, and other additives, in addition to the emission powder, in accordance with the invention.

It is preferred that the far-infrared emission powder is contained in an amount of approximately 25 to 50% by weight in the resin coating. For example, if the content of far-infrared emission powder is less than 25% by weight, the emissivity becomes poor. On the other hand, the emissivity is not further increased when more than 50% by weight of the emission powder is used.

See the abstract, col. 4, lin28 through col. 7, line 60 and the claims.

Tanaka et al discloses radiation curable aqueous coating compositions, that are deemed to be safe and which adhere to metal surfaces without the usual corrosion problems. The compositions of the invention contain:

- (1) a phosphoric acid ester compound having an ethylenically unsaturated double bond, (2) an aqueous polyurethane resin having both an ethylenically unsaturated double bond and a group capable of forming a salt, and
- (3) colloidal silica.

The coated metal material of the invention, comprises a metal material and a coating film formed on the surface of the metal material, the coating film being formed by curing the radiation curable aqueous coating composition with radiation. See paragraph [0112].

A metal coating agent may be used in the invention such as zinc, nickel, copper, chromium, tin, lead, aluminum, iron, or an alloy thereof; a metal-based coating agent prepared by dispersing silica, alumina, polyethylene glycol or amine in the metal coating agent; a metal compound coating agent such as zinc phosphate, magnesium phosphate, or alumina; and a non-metal coating agent such as ceramics, graphite, resin or a mixture thereof. A coating layer can be formed on the surface of the metal material by a thermal spraying or plating method using these coating agents. See paragraph [0117].

The coating step of the invention includes a step (4) of vaporizing the solvent which can be conducted by a commonly known method such as air drying, hot-air heating, induction heating, irradiation with infrared ray and far infrared ray, ultrasonic vibration or the like. See paragraph [0134].

Kim et al, Japanese Patent No.020030052373 discloses ceramic powders having sterilization and far infrared emission. The bio- ceramic powders are infrared ceramic powders and include MgO, Mg(OH)₂, ZnO, Zn(OH)₂, CaCO₃, and mixtures thereof, etc., and are applied to bio-products such as resin-coated steel plates, wall papers, furniture and plastic cases.

JP 11335596 A discloses far infrared radiation type antibacterial and deodorizing paint compositions. Comprising (A) ceramics powder having av. dia. of 100 m and (B) a resin component of heat curable resin or thermoplastic resin, in a ratio of (A) : (B) of 100 : 25 : 550 by wt. The ceramics consist of at least one of SiO₂, Al₂O₃, TiO₂, ZrO₂, Fe₂O₃, CuO, MgO, NiO, CaO, Li₂O, CoO. The ceramics comprises (pts./wt.) (100) Al₂O₃, (10-50) SiO₂ and (0-100) TiO₂. (B) comprises (B-1) a resin having OH which is at least one of a polyester having OH value of 5 - 300 mgKOH/g and acid value of 0 - 200 mgKOH/g and acrylic resin having OH value of 5 - 300 mgKOH/g and acid value of 0 - 200 mgKOH/g, and (B-2) isocyanate compound or blocked isocyanate compound in a ratio of (B-1)/(B-2) of 15/85 to 90/10. The paint comprises two separate liquid components : (1) of (A) and (B-1), and (2) of isocyanate. The thermoplastic resin comprises vinyl chloride resin or polyethylene. The paint further comprises pigment.

The substrate, panel, film which are coated with the paint composition are useful for constructing dwelling spaces, public spaces, hospitals, cars, trams, airplanes, etc.

Tanaka et al indicates that Japanese Unexamined Patent Application, First Publication No. Sho 61-83262, Japanese Examined Patent Application, Second Publication No. Hei 2-41555 and Japanese Unexamined Patent Application, First Publication No. Hei 5-320568 disclose a thermosetting composition, the adhesion of which is improved by adding a reaction product of an

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epoxy resin and phosphoric acid, or an epoxy resin, phosphoric acid ester, and carboxylic acid to an aqueous acrylic resin and an aqueous amino resin. Tanaka et al teaches that the Japanese references equate the use of phosphoric acid and phosphoric acid esters for improving the adhesion of coating compositions. See paragraph [0031].

Applicant's invention involves the combining of old elements wherein no unexpected results are achieved. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to employ phosphoric acid in the compositions of Lee et al to derive their usual adhesion enhancing properties. Likewise, it would have been obvious to one of ordinary skill in the art to utilize phosphoric acid in lieu of a phosphoric acid ester of Tanaka et al to derive their usual adhesion enhancing properties. Tanaka et al teaches that the Japanese references cited therein at [0031] equate the use of phosphoric acid and phosphoric acid esters for improving the adhesion of coating compositions.

Since Lee et al states that any resin, which is applied to steel plates can be used to combine with the emission powder of the invention, with Illustrative, non-limiting examples of the resins useful in the invention including polyester resins and acryl resins, it would have been obvious to utilize the polyurethane compositions of Tanaka et al in the manner disclosed by Lee et al., particularly since they are used for similar reasons.

Each of the Japanese references provides additional documentation supporting the use of ceramic powders in paint and coating compositions.

Claims 12, 13, 17 and 18 are objected to as depending upon a rejected base claim.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kriellion A. Sanders whose telephone number is 571-272-1122. The examiner can normally be reached on Monday through Thursday 8:30am-7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kriellion A. Sanders/

Primary Examiner, Art Unit 1796

Kriellion A. Sanders
Primary Examiner
Art Unit 1796

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